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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,854

12/21/2005

Jozef Thomas Van Beek

NL 030788

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02/23/2011

NXP, B.V.

NXP INTELLECTUAL PROPERTY & LICENSING

M/S41-SJ

1109 MCKAY DRIVE

SAN JOSE, CA 95131

EXAMINER

ROJAS, BERNARD

ART UNIT

PAPER NUMBER

2832

NOTIFICATION DATE

DELIVERY MODE

02/23/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/561,854	VAN BEEK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	BERNARD ROJAS	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,4-10,12 and 14-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-9,12,14,15 and 18-21 is/are rejected.
- 7) ☒ Claim(s) 6,10,14,16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/07/2010 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5, 7-9, 15 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. [US 6,218,911] figures 1-4h in view of Oberhammer et al. [US 2007/0256917].

Claim 1, Kong et al. teaches discloses an electronic device [20] comprising a microelectromechanical system (MEMS) element [figure 1], the element comprising first [28] and second [26] electrodes and an intermediate beam [24] with first and second opposing conductive side faces, the first side face [left side of 24] facing the first electrode [28] and the second side face [right side of 24] facing the second electrode [26], which beam [24] is movable by application of a driving voltage [+5V DV, by 34 and 36] between said first [28] and second [26] electrodes [figures 2 and 3], characterized in that: the second electrode [26] and the second conductive side face of the beam [right side of 24] form with an intermediate dielectric [68, see figure 4h] a first switchable capacitor that is connected in a signal path between an input [RF in] and an output [RF out, col. 3 lines 36-44], and the first electrode [28] and the first side face of the beam [left dies of 24] form with an intermediate dielectric [68, see figure 4h] a second switchable capacitor, that is coupled from the signal path [RF in] to ground [through terminating resistor 42, col. 3 lines 44-51].

Kong fails to teach the claimed electrode size and method of operation.

Oberhammer et al. discloses an electronic device [figures 3A-3C] comprising a microelectromechanical system (MEMS) element, the element comprising first and second electrodes [312/310 repectively] wherein the first electrode [312] has a surface area larger than that of the second electrode [310] to improve isolation and an

Art Unit: 2832

intermediate beam [315] with first and second opposing conductive side faces [top and bottom], the first side face [top] facing the first electrode [312] and the second side face [bottom] facing the second electrode [310], which beam is movable by application of a driving voltage between said first and second electrodes [as shown in figures 3A-3C], wherein the beam is embodied as a third electrode [315] wherein the third electrode is substantially elastic, such as to be attachable with a first surface area at one edge to the second electrode and with a second surface area at an opposite edge to the first electrode, and such that on application of an actuation voltage the ratio of first to second surface area is changeable [figures 3A-3C]; wherein the Mems device can be used as a tunable capacitor [abs].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the beam of Kong to allow for selective actuation as taught by Oberhammer et al. to allow for a greater degree of adjustment [resulting capacitance according to the position of the beam] in the device of Kong et al.

Claim 5, Kong et al. discloses an electronic device as claimed in claim 1, wherein the electrodes [24, 26, 28] are present in planes substantially parallel to a substrate [22, see figure 4h]

Claim 7, Kong et al. discloses an electronic device as claimed in claim 1, wherein the conductive side faces [left and right sides of beam 24] of the beam [24] are connected to the input [RF in] and the first electrode [26] functions as the output [to ground, see figure 3].

Claim 8, Kong et al. discloses an electronic device as claimed in claim 2, wherein the third electrode [24] is provided with an electrically insulating layer [68] at both the first and the second side faces [figure 4h].

Claim 9, Kong et al. discloses an electronic device comprising a microelectromechanical systems (MEMS) element [20] provided on a substrate [22], comprising first [28] and second [26] electrodes, which electrodes [28,26] are provided in planes that are substantially parallel to the substrate [22, see figure 4h], an intermediate beam [24] being provided between said first [28] and second [26] electrodes, said intermediate beam [24] having first and second opposing conductive side faces [left and right sides of 24], the first side face [left side of 24] facing the first electrode [28] and the second side face [right side of 24] facing the second electrode [26], which beam [24] is movable by application of a driving voltage [+5V DC, via 34 and 36] between said first [28] and second [26] electrodes [figures 2 and 3]; characterized in that the first and second conductive side faces [left and right sides of 24] are part of the same electrically conductive layer being a third electrode [24, col. 3 lines 16-25].

Kong fails to teach the claimed electrode size and method of operation.

Oberhammer et al. discloses an electronic device [figures 3A-3C] comprising a microelectromechanical system (MEMS) element, the element comprising first and second electrodes [312/310 respectively] wherein the first electrode [312] has a surface area larger than that of the second electrode [310] to improve isolation and an intermediate beam [315] with first and second opposing conductive side faces [top and bottom], the first side face [top] facing the first electrode [312] and the second side face

Art Unit: 2832

[bottom] facing the second electrode [310], which beam is movable by application of a driving voltage between said first and second electrodes [as shown in figures 3A-3C], wherein the beam is embodied as a third electrode [315] wherein the third electrode is substantially elastic, such as to be attachable with a first surface area at one edge to the second electrode and with a second surface area at an opposite edge to the first electrode, and such that on application of an actuation voltage the ratio of first to second surface area is changeable [figures 3A-3C]; wherein the Mems device can be used as a tunable capacitor [abs].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the beam of Kong to allow for selective actuation as taught by Oberhammer et al. to allow for a greater degree of adjustment [resulting capacitance according to the position of the beam] in the device of Kong et al.

Claim 15, Kong et al. discloses an electronic device as claimed in claim 2, wherein the first (30) and the third (220) electrodes are defined in layers, in which also the electrodes of a thin film capacitor [blocking capacitors 30 and 40] are defined.

Claims 18 and 19 contain "intended use" functionality language such as: the Mems element as part of an impedance matching network or a front end module with a power amplifier and a Mems element. Kong et al. discloses the claimed Mems switch structure; its use in various electronic devices would have been obvious to one of ordinary skill in the art at the time the invention was made. Applicant is advised that "intended use" language in the claims does not add any patentable weight.

Claim 20, Kong et al. discloses use of the electronic device according to claim 1, for RF applications, wherein the beam [24] is driven by a driving voltage [+5V DC] towards or from the first electrode [28, figures 2 and 3].

Claim 21, Kong et al. discloses a method of driving an electronic device as claimed in claim 1 by application of an actuation voltage [figures 2 and 3, +5V DC via 34 and 36].

Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. [US 6,218,911] figures 1-4h in view of Oberhammer et al. [US 2007/0256917], as applied above, and in further view of Kong et al. figures 5a-5b.

Claims 4 and 12, Kong et al. figures 1-4h, as modified by Oberhammer et al., discloses the claimed invention with the exception of the second electrode being subdivided into individual segments.

Kong et al. figures 5a-5b teaches a micro-switch wherein both the first and second electrodes are subdivided into individual segments [80/82 and 84/86 respectively].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to subdivide the second electrode of Kong et al. figures 1-4h as shown by figures 51-5c since the equivalence of one electrode being replaced by several smaller electrodes for their use in the electrostatic actuation of a micro-switch art is well known. The selection of any of these known equivalents to actuate the micro-switch would be within the level of ordinary skill in the art.



### ***Response to Arguments***

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Allowable Subject Matter***

Claims 6, 10, 14, 16, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BERNARD ROJAS whose telephone number is (571)272-1998. The examiner can normally be reached on M and W-F, 10:00-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2832

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elvin G Enad/

Supervisory Patent Examiner, Art Unit 2832

Br

/Bernard Rojas/

Examiner, Art Unit 2832